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Mr. Oscar Rohn has at considerable expense collected together series of 86 specimens of rocks from the Keeweenawan, the Penokee and the Marquette districts in the Lake Superior region. The collections represent all the important rock types found in these districts. They are intended more particularly to illustrate the reports of the United States geologists upon the copper and iron-bearing series of the Lake Superior region, though they may serve also as supplements to the collections of Paleozoic rocks at present furnished by dealers in geological materials, since they embrace specimens from the Algonkean and the Archean systems as recognized by the U. S. Geological Survey. The collections, having been made at the suggestion of Prof. C. R. Van Hise, may safely be accepted as typical. In spite of the great expense that has attended the making of the collection its price has been placed at $40.00. A rare opportunity is offered to practical geologists and to teachers of geology in our colleges to secure a trustworthy set of rock specimens from one of the most interesting geological regions in the United States. It is hoped that the offer will be availed of, and that Mr. Rohn may be induced to collect from other much discussed districts.

RECENT LITERATURE.

Zur paläozoischen Flora der Arktischen Zone by A. G. Nathorst, Zur Fossilen Flora des Polarländer, I, Theil, 1 Lief, 80 pp., XVI pl., Stockholm, 1894.

In this memoir on the Paleozoic Flora of the Arctic Zone, Dr. Nathorst presents a comprehensive and exhaustive review and revision of the Paleozoic plant material brought by the various expeditions from the Arctic regions. Following in the footsteps of Heer, he has been so fortunate as to have in hand not only all the Arctic specimens hitherto described, with the exception of the fragments brought by McClintock from Mellville Island, but also important later collections made from several localities in the Devonian and Eocarboniferous of Spitzbergen by De Geer and himself in 1882.

The results of Nathorst's work diverge along three lines, viz., the material imperfectly or often erroneously figured or described by Heer is presented in its true relations with detailed accuracy, and is supplemented by the more recent collections; the geological age of the fossiliferous teranes is more definitely fixed; and the identity or affinity of the floras with the others of the same age in lower latitudes is verified and found to constitute important evidence of climatic uniformity.

In the strictly paleobotanic portion of the memoir, which is most useful to students of fossil plants, there are, besides the refiguration and redescription of many of Heer's types, numerous points of special interest. To mention the many interesting species found, or the valuable specific correlations made by Dr. Nathorst, would far exceed the space available in a short notice. Among the more notable cases in the former class are the new provisional genus *Pseudobornia*, and the elaborations of the characters of *Cyclostigma* Haughton, which is here included in *Bothrodendron*, though a subgeneric differentiation is suggested. *Pseudobornia* appears, as its name indicates, to be Calamitic in its nature, though no prejudice is expressed as to its relations or possible identity with *Bornia* or *Calamites*. *Pseudobornia ursina* Nath. is very suggestive of *Calamites inornatus* Dn. The existence of a Knorrid stage in *Bothrodendron* is made plain beyond doubt, while the absense of both *Lepidodendron* and *Sigillaria* in the Bear Island Ursa beds, gives rise to a strong presumption that the *Stigmariœ* found there are to be referred as roots to *Bothrodendron*, which Nathorst seems to think may have been the ancestor of *Sigillaria* and *Lepidodendron*.

The flora of the Liefde Bay system of Spitzbergen with species of *Cyclopteris*, *Lepidodendron*, *Bothrodendron ?*, *Psilophyton*-like stems, and *Psygmophyllum*, while, indicating a Devonian age, is insufficient to warrant with confidence a closer correlation. A comparison, however, of Nathorst's figures shows a close relation of the Arctic Lepidodendra with the American Upper Devonian species. It seems to the writer that the *Psygmophyllum williamsoni* Nath., which is regarded by Nathorst as a Gymnosperm, deserves a comparison with our *Archœopteris obtusa* Lx., or the *A. archetypus* Schmalt.

The flora of the Lower Carboniferous of Spitzbergen with *Sphenopteris bifida* L. and H., and other species (several of them new) of *Sphenopteris*, *Adiantites*, *Cardiopteris*, *Archœopteris*, *Lepidodendron*, *Halonia*, *Bothrodendron* (*B. tenerrimum* A. and T.), *Carpolithes*, and *Samaropsis*, is closely related to, when not identical with, species in the Calciferous Sandstone and Lower Carboniferous Limestone of Great Britain, or the Culum of continental Europe. Several of the species, e. g., *Sphenopteris sturii* Nath., *S. flexibilis*, *S. kidstonii* and *Lepidodendron spitzbergensis* are very close to, if not identical with plants found in the Pocono (Vespertine) series of the Alleghenies, or the Horton series of Nova Scotia, though the general aspect of the flora seems as a whole to be somewhat younger.

The "Ursa" flora of Bear Island, with *Calymmatotheca, Pseudobornia, Lepidodendron* cf. *pedroanum,* and *Bothrodendron* (*B. kiltorkense* and others), has, with the exception of the comprehensive *Stigmaria ficoides,* nothing definite in common with the Lower Carboniferous flora, and appears to be nearest related to the *Kiltarkan* flora of upper Devonian age, or perhaps it represents the transition from the Devonian to the Carboniferous.

Finally, Dr. Nathorst discovers no difference in the character of the vegetation in the Devonian or Lower Carboniferous of the Arctic zone and that of the contemporaneous deposits in other parts of Europe, both the ferns and the Lycopods being of full size and apparently grown under conditions equally favorable, so that, so far as yet known, fossil plants offer no evidence of a difference in climate at those periods, between the Arctic and the lower latitudes of Europe. We may add that the same climatic conditions appear to have existed contemporaneously in the Appalachian region of the United States.—DAVID WHITE.

A Biological Examination of Lake Michigan in the Traverse Bay Region.—The Sixth Bulletin of the Michigan Fish Commission bears this title and in some one hundred pages records the work done by Dr. H. B. Ward and an efficient corps of assistants. Besides Dr. Ward's report, there are to be found within the covers of the bulletin the reports of five others, either assistants or those to whom specimens were sent. Aquatic plants are treated by H. D. Thompson, the Protozoa by Dr. C. A. Kofoid, the Rotifera by H. S. Jennings, the Turbellaria by Dr. W. McM. Woodworth and the Mollusca by Bryant Walker.

The objects of the work were a study of the life of the lake in all its manifold relations and especially of those factors which bear upon the welfare of food fishes in general and of the young white fish in particular.

The more important conclusions that Dr. Ward arrives at are:

That 63 per cent of the food of the common white fish, *Coregonus clupeiformis* consists of Crustacea. Twenty per cent of this is formed by *Mysis relicta* Loven, and 43 per cent by *Pontoporeia hoyi* Smith. After the crustacea come small mollusks at the rate of 26 per cent, made up mostly of several species of *Pisidium.*

That the ultimate source of the food supply is found in the plankton of which he estimates that there is for Lake Michigan almost 9,300,000 cubic meters, representing a weight of from 102,300 to 118,600 metric tons, or 12 to 16 pounds to each acre of surface. With Hensen he